PB82-240615

Example Scope of Work for Contracts to Prepare Sip Revisions to Attain and Maintain NAAQS

(U.S.) Environmental Protection Agency
Research Triangle Park, NC

5 Nov 76

U.S. Department of Commerce
National Technical Information Service
NTIS

TECHNICAL REPORT DATA
(Please read Instructions on the reverse before completing)

1. REPORT NO. OAQPS No. 1.2-068	2.
3. RECIPIENT'S ACCESSION NO. PB82-240615	
4. TITLE AND SUBTITLE GUIDELINE SERIES: Example Scope of Work for Contracts to Prepare SIP Revisions to Attain and Maintain NAAQS.	5. REPORT DATE November 5,1976
	5. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) Darryl D. Tyler, Chief Standards Implementation Branch, CPDD	8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS	10. PROGRAM ELEMENT NO.
	11. CONTRACT/GRANT NO.
12. SPONSORING AGENCY NAME AND ADDRESS U.S. Environmental Protection Agency Office of Air Quality Planning and Standards Research Triangle Park, North Carolina	13. TYPE OF REPORT AND PERIOD COVERED
	14. SPONSORING AGENCY CODE

15. SUPPLEMENTARY NOTES

16. ABSTRACT

This example Scope of Work is intended to show what tasks should be considered in preparing contracts to develop SIP revisions for attainment and/or maintenance of the NAAQS where the provisions of 40 CFR 51 Subpart D apply.

The tasks and procedures described in this example are based on 40 CFR Part 51 regulations, with emphasis on the provisions of Subpart D published May 3, 1976 (40FR 18382). Some of the individual tasks and procedures are not specifically required by the regulations, but are based on recommendations contained in the Air Quality Maintenance Guidelines or related guidelines.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Air Quality Measurement Emissions Air Pollution		EPA 68A

18. DISTRIBUTION STATEMENT	19. SECURITY CLASS (This Report)	21. NO. OF PAGES 46
	20. SECURITY CLASS (This page)	22. PRICE

EPA Form 2220-1 (Rev. 4-77) PREVIOUS EDITION IS OBSOLETE

PB82-240615

GUIDELINE SERIES

OAQPS NO. 1.2-068

November 5, 1976

EXAMPLE SCOPE OF WORK FOR CONTRACTS
TO PREPARE SIP REVISIONS TO
ATTAIN AND MAINTAIN NAAQS

U.S. ENVIRONMENTAL PROTECTION AGENCY

Office of Air Quality Planning and Standards

Research Triangle Park, North Carolina

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

SUBJECT: Example Scope of Work for Contracts to Prepare SIP Revisions to Attain and Maintain NAAQS

DATE: 5 NOV 1976

FROM: Darryl D. Tyler, Chief
Standards Implementation Branch, CPDD

TO: Addressees

THRU: Richard G. Rhoads, Director
Control Programs Development Division

Enclosed is a copy of an "Example Scope of Work for Contracts to Prepare SIP Revisions to Attain and Maintain NAAQS". Comments received from reviewers of an earlier draft have been incorporated.

The purpose of this example is to assist the Regional Offices in providing guidance to States developing Air Quality Maintenance Plans or other SIP revisions.

Parts of the example were developed from portions of completed contracts provided by Tom Williams, Program Resources Section, Control Programs Operations Branch, CPDD. However, these contracts did not contain extensive information on strategies or plan development, and material from other sources was therefore used to develop portions of the example contract dealing with those subjects. In the case of the section on Preparation of SIP Revisions, the material is basically a summary of the requirements of 40 CFR Part 51 Subpart D regulations.

We believe that many States which need (contractual) assistance are still in the early stages of developing SIP revisions, and the RO should find this material helpful in assisting those States. The material may also be helpful in preparing (contractual) assistance for upgrading emission inventories, providing modeling assistance, etc., and preparing SIP revisions, in the future.

It is anticipated that in many cases States and Regional Offices will want to focus on certain aspects of analysis and plan development at a particular time or in a specific contract. For that purpose, portions of the example can be excerpted as needed.

We would like to thank those who have commented on the previous draft. If there are any questions, please contact Joe Sableski or Ted Creekmore (FTS: 8-629-5437).

Enclosure

Addressees

Directors, Air and Hazardous Materials Division, Regions I, III-X
Director, Environmental Programs Division, Region II
Air Quality Maintenance Representatives, Regions I-X
R. Neligan, MDAD
J. Hidinger, OTLUP
C. Pratt, CPOB
T. Williams, CPOB (15)

EXAMPLE SCOPE OF WORK FOR CONTRACTS TO PREPARE SIP REVISIONS

Prepared by

Thomas Donaldson

Joseph Sableski

Office of Air Quality Planning and Standards

November, 1976

INSTRUCTIONS FOR USE

EXAMPLE SCOPE OF WORK FOR CONTRACTS TO PREPARE SIP REVISIONS

I. PURPOSE OF EXAMPLE

This example Scope of Work is intended to show what tasks should be considered in preparing contracts to develop SIP revisions for attainment and/or maintenance of the NAAQS where the provisions of 40 CFR 51 Subpart D apply.

As specified in 40 CFR Part 51 regulations, the State has responsibility for developing the SIP revisions for attainment and maintenance of NAAQS (hereafter referred to as "SIP revisions"), and in many cases, the State may perform all of the tasks themselves. However, it is assumed for purposes of this example that a contractor will develop the SIP revisions for the State under the direction of an EPA Project Officer.

The tasks and procedures described in this example are based on 40 CFR Part 51 regulations, with emphasis on the provisions of Subpart D published May 3, 1976 (40 FR 18382). Some of the individual tasks and procedures are not specifically required by the regulations, but are based on recommendations contained in the Air Quality Maintenance Guidelines or related guidelines. These tasks and procedures are included here in order that the contract Project Officer may consider them in writing a scope of work to meet specific needs as well as to complete the detailed tasks necessary to comply with the regulations.

The extent to which elements of this example are used will depend on the relative severity of the problems being confronted and the resources which are available. A metropolitan area with complex attainment/maintenance problems will need detailed analyses performed and comprehensive strategies developed if the air quality problems are to be effectively resolved. Other areas where problems are less complex may not need as much effort spent on analyses or strategies and the level of detail will be less.

The general work areas to be considered are baseline data collection, emission problems, emission allocations, modeling, analysis of modeling results, strategy testing and preparation of the revisions themselves.

References which may be helpful to Project Officers and contractors are included in an Appendix.

II. PROCEDURES

Once a contract to develop a SIP revision is awarded, the following general procedures should be used.

A. Detailed Work Plan

Before a contractor performs any extensive data gathering, compiles emissions and air quality data, performs any modeling calculations, or undertakes any other major tasks, he should meet with the Project Officer or his representative, during the first week or two of the contract to outline a detailed work plan. This work plan should include a time schedule for completion of major steps; identity

of persons who will perform the work; hours to be spent by each; detailed costs, including labor, travel, printing and overhead; and a complete description of the specific methodologies to be used, including a discussion of any necessary computer work. After the work plan is developed, the contractor should meet with the Project Officer, State and local pollution control agencies, describe the plan, and solicit comments and suggestions on the applicability of the plan for meeting the specific needs of the area. Comments should be incorporated into the plan, and additional elements of the plan should be developed to resolve any remaining problems. Once the work plan is approved by the Project Officer, the contractor should be required to follow it completely and no changes should be allowed without the written approval of the Project Officer. If any changes are necessary, the contractor should describe the details in writing together with the amount of additional work required.

B. Development of SIP Revisions

The contractor should be required to perform all work on the SIP revisions in accordance with applicable 40 CFR Part 51 regulations, including Subpart D published May 3, 1976 (40 FR 18382), and applicable Guidelines for Air Quality Maintenance Planning and Analysis. The Project Officer should specify which of the guidelines are applicable. In order to ensure that the SIP revisions will be effectively implemented and enforced, it is important that the contractor, under the direction of the Project Officer, consult and coordinate with State

and local agencies and other agencies identified under Section 51.58 of the 40 CFR Part 51 regulations, during the entire development of the revisions.

The contractor should also maintain contact with the Project Officer during the entire period of the contract, and meet with him as necessary. Any difficulties that may affect completion of the project tasks on schedule should be indicated to the Project Officer as soon as they become evident.

C. Modeling Requirements

Recommended simulation models are given in Volume 12 of the Maintenance Guidelines. The models actually used will depend upon the resources, and technical expertise, as well as the detail and accuracy of emissions, meteorological and air quality data which are available. Before preparing a scope of work for a specific contract involving modeling, the Project Officer should check with the Source Receptor Analysis Branch, Monitoring and Data Analysis Division of OAQPS for the latest guidance on recommended models.

Whenever possible, the Project Officer should specify in the scope of work the number of strategies which are to be tested, as well as the number of air quality projections required, in order that the number of modeling runs can be determined.

A minimum of 3 modeling runs will be required for air quality analysis per 40 CFR 51.51, plus a run for each strategy to be tested for the last year in which the plan is to be effective, and any other intermediate year which may be specified per 40 CFR 51.53.

D. Review of Past Studies

The Project Officer should provide copies of any pertinent past studies conducted in the area, as well as copies of all available emissions and air quality data from NEDS and SAROAD. The contractor should thoroughly review these studies and data for use in the contract.

E. Definition of the Area

In order for a SIP revision to be realistic and effective, the area to which it applies should be specifically defined. Although 168 areas have been designated as Air Quality Maintenance Areas (as described in Volume 14 of the Guidelines), a State may develop an attainment/maintenance plan for any other area which is found to need one, in accordance with the provisions of Section 51.12. However, in each case the jurisdictional boundaries of the area should be clearly identified, in order that the correct emissions data will be used as input to the models, and effective strategies can be developed. Where important sources and/or receptors are outside of the study area, provision should be made to explicitly consider them in the study area analysis.

F. Level of Detail

Updating of the emissions inventory, projecting emissions, and allocating emissions can be performed using Level or Order 1, 2, or 3 procedures as described in Volumes 7 or 13. It is assumed for the purpose of this example that the most detailed and accurate level (or order) 3 procedures are used. However, the Project Officer may specify levels (orders) 1 or 2 in accordance with the requirements of the models to be used, and the resources available.

G. Modular Sections

This example Scope of Work is written in sections, and the Project Officer may select only those sections or portions of sections which apply to his needs. Some tasks, such as updating the emission inventory, may have already been completed, in which case, the Project Officer will want to use only the applicable sections. Other tasks may not be required if the Project Officer considers them to be unnecessary to a particular project or if resources do not permit them.

H. Alternative Procedures

The Project Officer may wish to add tasks not included in this example or substitute other tasks. As provided for in 40 CFR 51.63, a State may request the approval of the Regional Administrator to use alternative procedures for conducting certain portions of the analysis and development of proposals for SIP revisions. For any such tasks, the Project Officer should specify in the scope of work exactly what requirements must be met and what problems are to be addressed by the contractor.

I. Forthcoming Techniques

A feasibility study has been started (as of August 1, 1976) by Argonne National Laboratory for the development of a Computerized Emissions Projection and Allocation System (CEPA). The existing systems being evaluated are:

1. Manual System, using Volumes 7 and 13 of the Guidelines Series.
2. Automated System using entirely new software based on Volumes 7 and 13 of the Guidelines Series.

3. Automated System incorporating all or some of the following, in whole or in part:

   a. Computer-Assisted Area Source Emission Gridding Procedure (CAASE)

   b. Regional Emission Projecting System (REPS)

   c. Air Quality for Urban and Industrial Planning (AQUIP).

The feasibility study is due to be completed by April 1977. If EPA decides to develop CEPA based upon the feasibility study results, the model will be ready about December 1977. In that case, this example scope of work will be modified to include the CEPA material.

J. Distribution of Report

When the contractor has completed the report, he will submit an appropriate number of copies to the Project Officer. The contractor will also submit detailed data and calculations used in analysis and development of the SIP revisions. The Project Officer should then send copies of the report, and the detailed data and calculations to the appropriate State and local agencies responsible for submitting the SIP revisions to EPA. These agencies can retain the data and calculations and modify the contractor's report as they desire for submittal to EPA.

EXAMPLE SCOPE OF WORK FOR CONTRACTS

TO PREPARE SIP REVISIONS TO ATTAIN AND MAINTAIN THE NAAQS

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Waste Management
Office of Air Quality Planning and Standards
Research Triangle Park, N.C. 27711

November, 1976

EXAMPLE SCOPE OF WORK FOR CONTRACTS
TO PREPARE SIP REVISIONS TO ATTAIN
AND MAINTAIN THE NAAQS

CONTENTS

		Page
I.	Introduction	1
II.	Work Plan	1
III.	Baseline Data	2
IV.	Emissions Projections	7
V.	Emissions Allocations	10
VI.	Modeling	10
VII.	Analysis of Modeling Results	12
VIII.	Strategy Testing and Evaluation	15
IX.	Preparation of SIP Revisions	19
X.	Reports	23
Appendix - References		24
Exhibit A - Reports of Work		28

EXAMPLE SCOPE OF WORK

I. INTRODUCTION

The scope of work shall identify the area for which the SIP revisions will be developed. Important sources outside the area shall also be included in the analysis. All work shall be performed in accordance with the 40 CFR Part 51 regulations[1] concerning requirements for preparation, adoption, and submittal of implementation plans and the Guidelines for Air Quality Maintenance Planning and Analysis as appropriate. In case of a conflict between the Guidelines and the regulations, the regulations shall govern. The Project Officer will specify those guidelines or parts thereof which are applicable. Variance from the methods and procedures specified shall be made only with his concurrence. If any tasks are affected by changes in the Guidelines or regulations, the contractor shall negotiate any additional costs with the Contracts Office.

II. WORK PLAN

Prior to starting work on the SIP revision, the contractor shall meet with the Project Officer, and all State and local agencies specified by the Project Officer, and prepare a detailed work plan. The work plan shall describe the major tasks to be performed, a time schedule for completion of each task, cost breakdown by tasks, and a complete description of the specific methodologies to be used, including any computer work. The contractor shall present this work plan to the Project Officer and the agencies specified by him. Any changes

suggested by them and considered necessary by the Project Officer, shall be incorporated by the contractor insofar as allowed by the general scope of work. Any additional costs shall be handled through the Contracts Office. Once the work plan is approved by the Project Officer, no deviation from the plan will be permitted without written approval of the Project Officer.

III. BASELINE DATA

A. Emission Inventory

1. For the pollutants specified by the Project Officer, the contractor shall update (or develop) an inventory of annual emissions for point, area, and line sources using the National Emission Report (NER) format, (Table 7.1 in Volume 7[2]) and using the updating procedures described in Volume 7. Level 3 procedures described in Volume 7, (the most detailed and accurate) shall be used unless otherwise specified by the Project Officer. The contractor shall submit summaries of baseline emissions in accordance with 40 CFR 51.51.

2. For those pollutants being studied the point source inventory shall include any facility which has the potential to emit 100 tons or more per year of any pollutant. The contractor shall obtain (or develop) the information needed to model these point sources such as stack height, diameter, temperature, and velocity of stack gases, etc.

3. Potential emissions shall be defined as being the emissions that would occur if any existing control equipment were removed or deactivated. (Potential emissions are calculated by dividing the existing annual emissions estimate by the factor one minus the efficiency of the control device, if any).

4. For interstate areas, unless alternative procedures are approved by the Administrator under § 51.63, the same regional emission inventory shall be used as the basis for analysis in the constituent states as specified in 40 CFR 51.48.

5. All emissions data collected and updated under this contract that have not been previously sent to EPA shall be submitted in machine readable format to the EPA Regional Office Aeros contact. This data shall also be made available to the State if the Project Officer determines that it is needed to update their files.

6. Coding and keypunching errors shall be checked by the contractor prior to submission and all errors found by EPA in edit checks must be corrected by the contractor. All data rejected by EPA shall be corrected and resubmitted by the contractor. The cost to perform these tasks shall be separately identified by the contractor.

7. The Project Officer shall specify if the existing state and local data are to be updated or if a completely new inventory is to be developed.

8. The area source emission inventory for TSP and SO_2 shall include, in addition to annual estimates, estimates in tons per season as defined below.

a. Winter - Dec., Jan., and Feb.

b. Spring - March, April, and May

c. Summer - June, July, and August

d. Fall - Sept., Oct., and Nov.

The contractor shall consult with the Project Officer and agree on the sources of data to be used. The contractor shall reference

all sources of data used in development of the plan and work through the Project Officer in arranging initial contacts for sources of data.

[References 2-10 can be used in compiling and updating the emission inventory.]

B. Air Quality Data

1. Air quality data used in the data base shall conform to the requirements of 40 CFR 51.48. For interstate areas, unless alternative procedures are approved by the Project Officer, the same regional air quality baseline shall be used for analysis in the constituent states.

2. Only data obtained in accordance with monitoring methods specified in 40 CFR 51.17a shall be used.

3. All air quality data used in the baseline which has not been previously submitted to EPA will be identified in accordance with the forms specified in 40 CFR 51.7(a)(2).

4. The contractor shall gather, review and evaluate air quality data from all available sources, including SAROAD, and State and local agencies, through Regional Office Aeros contacts. The contractor shall evaluate the data for:

a. Reliability - To determine if samples have been collected and processed according to acceptable quality control practices. [See "Quality Control Practices in Processing Air Pollution Samples - APTD 1132.][11]

b. Suitability for calibrating dispersion models - The contractor shall ensure that when possible the air quality data used are for the same baseline year as for the emission inventory and that all data are for the same year. Substitute data may be used, if necessary, with the approval of the Project Officer.

c. Representativeness - The contractor shall obtain data for specific areas, including hot spots, background concentrations, and areas with the highest population density or total population - [see page 31 of Volume 11, "Air Quality Monitoring and Data Analysis".[12]]

5. To ensure that air quality data used are representative of the area, the contractor shall, as required by the Project Officer, review monitoring methods and site characteristics, including distances from major pollutant sources and the location of the instrument probe, its height above ground, and distance from surfaces and minor sources including chimneys, incineration flues, laboratory hood vents, etc. Only data obtained by acceptable monitoring methods and instruments which are correctly sited, shall be used. [Siting guidelines are shown on pages 25-32 of reference 13 and acceptable measuring methods are described on page 31 of Volume 11.[12]]

6. When data for averaging times specified in the NAAQS are not available, the contractor shall estimate concentrations using Larsen's statistical methods as detailed in AP-89.[15]

7. The contractor shall point out any deficiencies in the air quality data or in the procedures for acquiring reliable, accurate air quality data to the Project Officer in the appropriate progress reports together with suggestions for specific corrective actions.

8. The contractor shall, at the discretion of the Project Officer, analyze air quality for the base year with regard to correlations with specific sources or classes of sources, and meteorology.

[References 16 through 19 may be used in compiling a complete air quality data base.]

C. Meteorology

1. The contractor shall collect meteorological data for the area of interest for the purpose of applying dispersion models, for identifying the frequency and duration of meteorological conditions affecting short term high concentration levels, and for estimating emissions from space heating.

2. For the purpose of accurately calibrating models, the contractor shall ensure that when possible the meteorological data used are for the same baseline year as for the emission inventory and air quality data.

3. The contractor shall use data from the National Climatic Center (NCC) in Asheville, N.C. for wind speed, wind direction and atmospheric stability, temperature and pressure, cloud cover, ceiling height, and degree days, unless it is clearly inappropriate or more reliable data collected by State and local air pollution control agencies, meteorological data centers, airports, or local weather stations are available. [Other sources of data are:

a. AP-101 "Mixing Heights, Wind Speeds and Potential for Urban Air Pollution Throughout the Continguous United States."[20]

b. Maintenance Guideline Volume 10 "Reviewing New Stationary Sources."[9]

c. The "Workbook of Atmospheric Dispersion Estimates."[21]

d. A list of the meteorological inputs required for the various dispersion models is given in Volume 12[22]. [The Air Quality Workshop Volume I - Manual[5] also discusses, on pages 30-36, meteorological data needed to establish a complete data base.]

IV. EMISSION PROJECTIONS

1. For the purpose of estimating emissions in future years, unless otherwise specified by the Project Officer, the contractor shall use the most detailed and accurate procedures (Level 3 in Volume 7,[2] and Order 3 in Volume 13[23]) in accordance with 40 CFR 51.44, 51.45 and 51.49. The contractor shall estimate future activity levels, assuming most probable growth, and project baseline emissions for at least 20 years, or if specified by the Project Officer, for lesser periods to conform to the requirements of 40 CFR 51.51.

2. The contractor shall identify sources of growth projections, as well as the parameters used in projections, in accordance with 40 CFR 51.47.

3. The contractor shall demonstrate that emission projections are consistent with activity levels used by agencies responsible for planning under the following programs, as specified in 40 CFR 51.58:

a. The Federal Highway Administration (FWHA) Act of 1962 (as amended) and the Urban Mass Transportation Act of 1964 (as amended).

b. The Department of Housing and Urban Development (HUD) Section 701 Comprehensive Plans.

c. State Plans for meeting requirements of Section 208 of the Water Pollution Control Act amendments of 1972.

d. State plans for meeting requirements of the Coastal Zone Management (CZM) Act of 1972 (as amended in 1976).

e. Regional, State and local planning projections affecting the area under study.

4. The contractor shall examine the projection variables of the above programs for consistency with the projected growth of emissions and report any conflicts to the Project Officer with recommended solutions.

5. The contractor shall submit summaries of emissions projections for the tenth year following the date of the Administrator's identification of the area, for at least one intermediate year, and for the end of the analysis period in accordance with the requirements and format given in 40 CFR 51.51.

6. With the approval of the Project Officer, OBERS[24] growth projections may be used wherever local growth data are not available.

7. In projecting emissions, the contractor shall consider any plans for fuel switching under the Energy Supply and Environmental Coordination Act of 1974 (ESECA),[25] and recommend fuel switching, where possible.

8. For projection of emissions, the contractor shall coordinate with appropriate State and local air pollution control and planning agencies to obtain and project expected growth patterns for 20 years, or a period of time compatible with the plans of other agencies in the same area, as agreed to by the Project Officer.

9. Traffic data for modeling HC, CO, and NO_x emissions shall be obtained from the State Departments of Transportation, the State Highway Administration or other appropriate organization.

10. The contractor shall consult with the Project Officer and State and local agencies as to the programs which must be accounted for in projecting emissions, including, but not limited to, the following:

a) The Employer Carpool Incentive program.

b) Traffic flow improvement programs.

c) Mandatory inspection/maintenance programs (using procedures and factors given in Appendix D of AP-42[4]).

d) New Source Performance Standards.

e) The Federal Motor Vehicle Control Program.

f) Vapor recovery control programs.

g) VMT trend data (including that required by EPA to be collected in TCP areas).

[Information on projection techniques is given in references 5 and 26.]

V. EMISSION ALLOCATIONS

1. The contractor, for the base year and for all projection years, shall allocate projected emissions for all categories of emission sources given in the emission inventory above, in conformance with 40 CFR 51.45, 51.49, and 51.51, as directed by the Project Officer. The contractor shall apply the procedures detailed in Volumes 8[27], 13[23] and the supplement to Volume 13[26] to the extent that they are appropriate and within the resources available, as determined in consultation with the Project Officer.

2. The contractor shall develop and submit a master grid and map of emissions for each pollutant using Volume 13[23] (pages 133-139) as specified in Section 51.51(b). Grid sizes shall be 1km minimum as recommended in Volume 13. Generally the maximum grid size should be 8km for urban areas, but may be larger for rural areas.

3. The master grid system used shall be suitable for input to any point and area source dispersion models to be used in relating emissions and air quality.

4. All distribution functions used in the emission allocation procedures shall be clearly identified.

5. The contractor shall summarize emissions allocations for the tenth year following the Administrator's identification of the area, for the intermediate year chosen in IV(5) above for projected emissions, and for the end of the applicable analysis period, to conform to the requirement and format given in 40 CFR 51.51.

VI. MODELING

1. The contractor shall employ the models and procedures given in Volume 12 as specified in 40 CFR 51.46.

2. The contractor shall present projected ambient air quality concentrations in tabulations and isopleth maps with a narrative interpretation for each pollutant for the target years under study consistent with the requirements of 40 CFR 51.51.

3. Models other than those listed in Volume 12[22] may be used if they are shown to be appropriate and approval is obtained from the Project Officer.

4. Multi-source models shall be validated and calibrated by the contractor if sufficient data, such as the latest full year of air quality data from SAROAD, or suitable data from State and local air pollution control agencies, are available. The Project Officer will specify the method to be used for calibration. Once a model is calibrated, each application of the model thereafter must make use of a data base similar to that on which the calibration was based.

5. For those pollutants modeled with AQDM, a source-receptor file (culpability list) as shown on pages 130 and 133 of the Workshop Manual[5] shall be developed as directed by the Project Officer who will specify the configuration of the matrix.

6. Both short term and annual concentrations shall be estimated for the projection years. Maximum short term concentrations shall be determined both from major isolated point sources and major aggregations of point sources.

7. In predicting future air quality, the contractor shall use meteorological data in the models which are representative of historical conditions, considering worst, average and latest years' data in

consultation with the Project Officer. The contractor shall use data which represent the same meteorological conditions in the projection years as in the baseline year.

8. Normally, emission rates used in the models shall assume maximum production capacity and compliance with regulations. In the case of known problem sources, expected rates may be used with adequate justification.

9. HC reductions shall generally be assumed to be proportional to VMT reductions, modified as necessary to reflect local conditions, e.g., characteristics of the meteorology, traffic and vehicle age distribution.

10. Only models described in Volume 12[22] as being appropriate to relate HC emissions to Ox concentrations shall be used, except that relationships based on local data shall be used where available, with the approval of the Project Officer.

11. As new guidance becomes available, the contractor shall employ it at the direction of the Project Officer. Upon approval of the Project Officer, the contractor shall make any necessary adjustments to the model or to the data base in order to accomodate any peculiar situations, such as exceptionally adverse meteorological or topographical conditions in the area under study.

VII. ANALYSIS OF MODELING RESULTS

1. The contractor shall conduct an analysis of the modeling results in accordance with 40 CFR 51.50.

2. In accounting for factors which affect the accuracy of projected concentrations the contractor shall consider, as specified by the Project Officer, the following:

a) The degree of completion of abatement activities for which regulations currently exist;

b) Current air quality concentrations, the magnitude of past year-to-year variations in air quality concentrations, and the degree to which the national standard is currently being violated;

c) The future date when currently applicable measures will no longer be able to ensure maintenance of national standards;

d) The stringency and comprehensiveness of existing regulations;

e) The adequacy of the existing emission inventory;

f) The adequacy of the current air quality surveillance procedures and enforcement activities;

g) The adequacy of the current new source review procedures;

h) The degree of confidence in the projected demographic and economic data that was used to project emissions;

i) The degree of confidence in the methods used to project emissions, allocate projected emissions and determine the air quality concentrations resulting from the projected emissions;

j) Local and regional meteorological and topographical conditions;

k) The frequency and severity of air pollution episodes since the adoption of the existing implementation plan;

l) Progress made in reducing pollutant concentrations in the last three years;

m) The adequacy of the manpower and financial resources that the State will obtain to implement current and future regulations and the growth of the control program since the adoption of the existing plan.

3. The analysis of modeling results shall, at the option of the project officer, also include the following:

a) Relationship of calculated concentrations to both primary and secondary standards, as well as year to year variations in measured air quality and frequency of air pollution episodes to determine the magnitude of the air quality problem.

b) Geographical extent of the problem, to distinguish widespread problems from those of a local nature and presence of "hot spots" to determine the need for special application of strategies.

c) Boundary problems, to determine if violations inside the study area are causing air quality problems outside the area, or vice versa. In interstate areas, the compatibility of each State's strategy shall be considered.

d) The variation of the problem with time, whether it is both an attainment and maintenance problem or either one alone in order that suitable strategies can be chosen.

4. When models with a source-receptor file are used, the contractor shall present a summary of the emission reductions needed to meet the standards at each receptor and a tabulation of the percent of total concentration contributed by each source. [As illustrated on pages 156 and 157 of the Air Quality Analysis Workshop Manual, Volume I.[5]]

5. If the modeling results indicate that there is no need for an AQMP or other SIP revision, the contractor shall make an analysis of all work performed, document it in a form suitable for review and recording, and present a final report in which such conclusions are fully supported.

VIII. STRATEGY SELECTION, TESTING AND EVALUATION

1. The contractor shall discuss available strategies with the Project Officer, develop a priority list of strategies and select those which may be applicable to the problems in the study area, including use of all achievable technological controls, existing source retrofit, fugitive dust controls, increased enforcement, and land use planning measures. Consideration shall be given, but not limited to the following, as appropriate:

a) Emission density zoning, a regulatory system in which the maximum legal rate of emissions of air pollutants from any given land area is limited by the size of the area and its zoning classification.

b) Emission allocations, a regulatory system in which the maximum legal rate of emissions of air pollutants from any given political jurisdiction or other area is assigned by an allocation procedure, and suitable sanctions, such as a construction ban, are imposed if an area uses up its allocation.

c) Transportation controls, including encouragement of mass transit, and measures discussed in the November 6, 1973 Preamble to State Implementation Plan Transportation Controls (38 FR 30626).

d) A methodology for controlling proposed new or modified buildings, structures, facilities, or installations, including municipal waste water treatment facilities, that induce or otherwise permit the development of other land uses and vehicular traffic that emit air pollutants for which there are national standards.

e) Fuel and energy conservation measures.

f) Regulatory and other types of measures to limit and guide the development of area, point, and line sources, including measures such as zoning and subdivision regulations, sewer and water connection bans, rezoning and building moratoria, capital improvement programming, and open space reservations.

g) Revision of local or regional development plans, and legal mechanisms to prevent any development not in accordance with the plans.

h) More restrictive emission controls and new source performance standards.

i) Progressive phase-out of central power plants and their replacement by remote plants wherever the change would not significant degrade air quality in the remote areas.

j) Greater use of district heating.

k) Fuel conversion such as coal gasification.

l) Phase-out of all on-site refuse incinerators.

m) Phase-out of inefficient oil burners.

n) Application of emission charges.

o) Tighter control over construction activities, including grading and burning.

p) Regulations affecting the timing or spatial location of emissions.

q) Specification of special operating conditions.

2. After it has been determined which measures and strategies are technically adequate, the contractor shall screen them using criteria which include the scope of the problem, availability and accuracy of data, social, institutional, and resource constraints and economic considerations.

3. For those strategies which have been selected, projected emissions shall be modeled and resulting concentrations compared to the standards. If air quality projections indicate that NAAQS will not be attained and maintained with these strategies, the contractor shall simulate the effect of additional control measures, designated by the Project Officer, on emissions. The contractor shall perform additional modeling runs to determine the effect of these measures. The contractor shall negotiate any additional costs with the Contracts Office before performing additional modeling.

4. Those strategies which are found to meet attainment/maintenance requirements of the study area will then be analyzed to determine which are the most suitable based on an evaluation of their social, institutional, economic and energy impacts, and public acceptability. Weights shall be assigned to each of the strategies, in consultation with Regional Office, State and local officials, and the strategy sets shall then be ranked in order. The weighting and ranking of the strategies shall be performed by one or more of the following procedures, unless otherwise specified by the Project Officer:

a. The Delphi panel, described in Volume 5,[28] page 25, and in the Sample Maintenance Plan for San Diego,[29] pages 81-96.

b. The Residual Environmental Quality Management (REQM) system described in Volume 5, page 104, and in the Trial Maintenance Plan for Baltimore[30], pages 117-148.

c. The Klee decision model[31] described in Appendix B of Volume 2.[32]

5. The contractor shall determine if the recommended strategies are compatible with the plans of all concerned State and local agencies, including those agencies listed in 40 CFR 51.58(b). The contractor shall obtain (or review) such plans (including those of agencies listed in 40 CFR 51.58(b)), and recommend any changes in the air strategies necessary for compatibility. The contractor, after consultation with the Project Officer, shall also recommend to the other non-air agencies involved (including those listed in 40 CFR 51.58(b)) any changes needed in their plans in order to ensure attainment and maintenance of the NAAQS.

6. The contractor shall discuss any strategy changes with the Project Officer and State and local agencies, and if any significant changes are made the contractor shall retest the strategies, through modeling, to ensure attainment and maintenance of the NAAQS. The contractor shall negotiate any additional costs with the Contracts Office before performing these tasks.

7. Those strategies which appear most feasible for implementation, based on the analysis made in VIII 2, 3, 4 and 5 above, shall be identified for use in the SIP revision, with a brief discussion of reasons why these strategies are preferred.

IX. PREPARATION OF SIP REVISIONS

A. After the preferred strategies have been selected, evaluated, and approved by the Project Officer, the contractor shall develop the SIP revisions for attainment and/or maintenance, including legally enforceable regulations, while continuously consulting with State and local agencies including those listed in 40 CFR 51.58 and the Project Officer. The contractor shall submit the following items:

1. A detailed description of each change to the existing SIP required by the revision, together with a list of any documents or portions of the SIP being revised (per 40 CFR 51.52).

2. Documentation demonstrating that the SIP revisions will provide for attainment and maintenance of the required standards for the time period specified by the Administrator, using analysis techniques specified in 40 CFR § 51.44, § 51.45 and § 51.46. This will include summaries of the computations, assumptions and judgments used in determining the emission reductions which will be attained through application of the control strategies. It would also include tabular and graphic displays of the emission and concentration levels expected to be achieved for the last year of the analysis and any other year specified by the Administrator (per 40 CFR 51.53).

3. A description of the control measures, enforceable laws and regulations, administrative procedures, enforcement methods, and effect of the SIP revisions on new source review procedures (per 40 CFR 51.54).

4. Demonstration of adequate legal authority to enforce the control measures of the SIP revisions (per 40 CFR 51.55). The contractor shall present a discussion summarizing the status of legal authority as required by 40 CFR 51.55, and shall coordinate with the State, or local agencies as appropriate, on the question of developing adequate legal authority as early as possible in the development of the revisions.

5. A discussion of possible strategies for maintaining standards beyond the period over which the SIP revisions are effective, for at least 20 years (or not less than 10 years if modified under 40 CFR 51.63) including a discussion of control strategies, and laws and regulations needed (per 40 CFR 51.56).

6. A description of the laws and regulations the contractor, in consultation with the Project Officer, believes will be required to ensure continued maintenance of the NAAQS (per 40 CFR 51.57).

7. A description of procedures the appropriate State and local agencies propose to insure intergovernmental cooperation in preparation and implementation of the SIP revisions, including:

a. The name of the agency responsible for development of the revisions, as designated by the Governor (per 40 CFR 51.58(a)).

b. Procedures for consultation and review, used by the agency designated by the Governor to be responsible for developing the SIP revisions to ensure continuous involvement of State and local agencies and agencies responsible for local and areawide planning, including those responsible for the following (per 40 CFR 51.58b):

1) Areawide waste treatment management planning under Section 208 of the Federal Water Pollution Control Act Amendments of 1972.

2) Planning under Section 701 of the Housing and Urban Development Act of 1974.

3) Urban transportation planning under the Federal Aid Highway Act of 1962 (as amended) and the Urban Mass Transportation Act of 1964 (as amended).

4) Planning under the Coastal Zone Management Act of 1972 (as amended).

5) Cognizant clearinghouses established under the Office of Management and Budget Circular A-95, published in the Federal Register of January 13, 1976 (41 FR 2052).

c. Procedures followed by the agency developing the SIP revisions for coordinating with other planning programs affecting or affected by the revisions, including procedures for coordinating and integrating the following per 40 CFR 51.58(c)):

1) Common data bases

2) Work programs

3) Similar policy advisory bodies

4) Public participation and information programs

5) Air quality (as a factor in other planning programs)

6) Consistency between programs.

d. A description of the relationship between the SIP revisions and State and local programs for management of land use, transportation, parking, water quality, solid waste, and other environmental programs (per 40 CFR 51.58(d)).

e. A description of the relationship of the SIP revisions to plans in adjoining areas (per 40 CFR 51.58(e)).

f. A description of procedures for ensuring public and governmental participation in developing the SIP revisions, the State, areawide and local agencies responsible for development and implementation, any interagency agreements and a discussion of any comments received from the A-95 reviews or public hearings (per 40 CFR 51.58(g)).

8. A description of the resources available, additional resources needed, and projections of resources which will be acquired, for implementation of the SIP revisions, for the first and last years covered by the revisions and any other years specified by the Administrator (per 40 CFR 51.60(a)).

B. In accordance with 40 CFR 51.62, the contractor shall submit separately all detailed data and calculations used in analysis and development of SIP revisions to the Project Officer. Only a summary of the data and calculations shall be included in the SIP revisions.

C. The contractor shall prepare the final draft SIP Revisions report in accordance with the format given in 40 CFR 51.61, and present it to the Project Officer, State, local and other interested agencies at an open meeting.

D. The contractor shall incorporate the comments from the open meeting into the final draft SIP revisions report in consultation with the Project Officer.

E. The contractor shall submit appropriate copies of the final SIP revisions report to the Project Officer for approval.

F. The contractor shall be available to answer any questions on the revisions at public hearings and from A-95 clearinghouse reviews required in 40 CFR 51.4 and 40 CFR 51.58(f). The contractor shall summarize comments received as a result of the public hearings and A-95 reviews and submit the summary to the Project Officer with the SIP revisions. The contractor shall also assist the Project Officer in preparing a record of the public hearings in accordance with 51.4(c). [Other materials which can be used in preparing SIP revisions are given in references 33-43.]

X. REPORTS

The attached Exhibit A is a copy of the standard reporting requirements being used for all Regional Offices contracts.

APPENDIX

REFERENCES

1. "Maintenance of National Ambient Air Quality Standards." U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. 40 FR 18382, May 3, 1976.

2. "Guidelines for Air Quality Maintenance Planning and Analysis, Volume 7: Projecting County Emissions, Second Edition," EPA-450/4-74-008. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. January 1975.

3. "Guidelines for Compiling a Comprehensive Emission Inventory." APTD-1135. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. March 1973.

4. "Compilation of Air Pollutant Emission Factors, Second Edition." AP-42, (with 6 supplements). U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. April 1973.

5. "Air Quality Analysis Workshop, Volume I - Manual." EPA-450/3-75-080-a. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. November 1975. Chapters 1-3.

6. "1972 National Emissions Report." EPA-450/2-74-012. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. June 1974 (issued periodically).

7. "Investigation of Fugitive Dust, Volume I - Sources, Emissions and Control." EPA-450/3-74-036-a. U.S. Environmental Protection Agency Research Triangle Park, N.C. 27711. June 1974.

8. "Guidelines for Air Quality Maintenance Planning and Analysis, Volume 9: Evaluating Indirect Sources." Report No. EPA-450/4-75-001. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. (Revised)

9. "Guidelines for Air Quality Maintenance Planning and Analysis, Volume 10: Reviewing New Stationary Sources." Report No. EPA-450/4-74-011. U.S. Environmental Protection Agency, N.C. 27711. (Revised)

10. "Investigation of Fugitive Dust - Volume I - Sources, Emissions, and Control," and "Volume II - Control Strategy and Regulatory Approach." U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. June 1974.

11. "Quality Control Practices in Processing Air Pollution Samples." APTD-1132. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. March 1973.

12. "Guidelines for Air Quality Maintenance Planning and Analysis, Volume 11: Air Quality Monitoring and Data Analysis." EPA-450/4-74-012. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. September 1974.

13. "Guidance for Air Quality Monitoring Network Design and Instrument Citing." OAQPS Guideline 1.2-012. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. January 1974.

14. "Designation of Unacceptable Analytical Methods of Measurement for Criteria Pollutants" EPA-450/4-74-005. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. September 1974.

15. Larsen, R.I., "A Mathematical Model for Relating Air Quality Measurements to Air Quality Standards." AP-89. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. November 1971.

16. Larsen, R.I., "An Air Quality Data Analysis System for Interrelating Effects, Standards, and Needed Source Reductions - Part 2." JAPCA 24: 511. June 1974.

17. "Selecting Sites for Carbon Monoxide Monitoring." EPA-450/3-75-077. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. September 1975.

18. "Guidelines for the Evaluation of Air Quality Trends." OAQPS Guideline 1.2-014. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. February 1974.

19. "Guidelines for Evaluation of Air Quality Data." OAQPS Guideline 1.2-015. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. February 1974.

20. Holzworth, G.C., "Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States." AP-101. U.S. Ennvironmental Protection Agency, Research Triangle Park, N.C. 27711. 1972.

21. Turner, D.B., "Workbook of Atmospheric Dispersion Estimates." AP-026. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. 1970.

22. "Guidelines for Air Quality Maintenance Planning and Analysis, Volume 12: Applying Atmospheric Simulation Models to Air Quality Maintenance Areas." EPA-450/4-74-013. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. September 1974.

23. "Guidelines for Air Quality Maintenance Planning and Analysis, Volume 13: Allocating Projected Emissions to Sub-County Areas." EPA-450/4-74-014, U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. November 1974. And, Volume 13; "Allocating Projected Emissions to Sub-County Areas, Appendices A & B, EPA-450/4-74-014a. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. March 1975.

24. OBERS Projections, Economic Activity in the U.S., Volume 5, Standard Metropolitan Statistical Areas. U.S. Water Resources Council, Washington, D.C. 1972.

25. National Summary of State Implementation Plan Reviews (ESECA). Volume I - Synopsis, EPA-450/3-75-053a, and Volume II - Technical Support Document, EPA-450/3-75-053b. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. July 1975.

26. "Accounting for New Source Performance Standards in Projecting and Allocating Emissions - A Hypothetical Example." EPA-450/4-74-014b. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. September 1975.

27. "Guidelines for Air Quality Maintenance Planning and Analysis, Volume 8: Computer-Assisted Area Source Emissions Gridding Procedure." EPA-450/4-74-009. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. September 1974.

28. "Guidelines for Air Quality Maintenance Planning and Analysis, Volume 5: Case Studies in Plan Development." EPA-450/4-74-006. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. December 1974.

29. Development of a Sample Air Quality Maintenance Plan for San Diego, EPA-450/3-74-051 (NTIS PB 236-932/AS). U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. September 1974.

30. "Development of a Trial Air Quality Maintenance Plan Using the Baltimore Air Quality Control Region." EPA-450/3-74-050. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. 1974.

31. A.J. Klee, "The Role of Decision Models in the Evaluation of Completing Environmental Health Alternatives." Management Science (Journal of the Institute of Management Sciences) Volume 18, Number 2, October 1971.

32. "Guidelines for Air Quality Maintenance Planning and Analysis, Volume 2: Plan Preparation." EPA-450/4-74-002. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. July 1974.

33. "Guidelines for Air Quality Maintenance Planning and Analysis, Volume 3: Control Strategies." EPA-450/4-74-003. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. July 1974.

34. "Guidelines for Air Quality Maintenance Planning and Analysis, Volume 4: Land Use and Transportation Considerations." EPA-450/4-74-004. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. August 1974.

35. "Guidelines for Air Quality Maintenance Planning and Analysis, Volume 6: Overview of Air Quality Maintenance Area Analysis." EPA-450/4-74-007. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. September 1974.

36. "An Air Pollution Impact Methodology for Airports - Phase I" APTD-1470. U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. January 1973.

37. "A Guide for Reducing Air Pollution Through Urban Planning" (APTD-0937), U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711. October 1973.

38. J.J. Roberts, E.G. Croke and S.G. Booras, "A Critical Review of the Effect of Air Pollution Control Regulations on Land Use Planning" JAPCA, 25:500. May 1975.

39. "Air Quality Implementation Plans, Prevention of Significant Deterioration." U.S. Environmental Protection Agency. 39 FR 42510. December 5, 1974.

40. Carpenter, S.B., et al. "Principle Plume Dispersion Models: TVA Power Plants." J. Air Poll. Control Assn., Vol. 22, No. 8, pp. 491-495, 1971.

41. J. Hrenko, D.B. Turner, and J. Zimmerman. "Interim User's Guide to a Computation Technique to Estimate Maximum 24-Hour Concentrations from Single Sources," including the CRS-1 and CRSTE power plant models. Unpublished Manuscript, Environmental Protection Agency, Research Triangle Park, N.C. 1972 [Available upon request from EPA, OAQPS, Monitoring and Data Analysis Division, Research Triangle Park, N.C. 27711.]

42. Pooler, F. "Potential Dispersion of Plumes from Large Power Plants." PHS Publication No. 99-AP-16, (NTIS PB 168790). Superintendent of Documents, Government Printing Office, Washington, D.C., 1965.

43. Smith, M.E., Ed. "Recommended Guide for the Prediction of the Dispersion of Airborne Effluents." The American Society of Mechanical Engineers, New York, N.Y., 1968.

EXHIBIT A

REPORTS OF WORK

WORK PLAN

1. Original Work Plan

The Contractor will submit a Work Plan to the Project Officer for approval not later than two (2) weeks after the date of award of the contract. An information copy of the plan shall be submitted to the Contracting Officer. Unless otherwise set forth in the schedule of the contract, the plan shall include all of the following elements:

Project Summary Sheet
Project Narrative
Project Organization Chart
Project Manpower and Cost Estimates
Task Breakdown
Project Schedule and Milestones
Task and Subtask Composition

2. Revisions to Work Plan

The Contractor will submit revisions to the Work Plan described above (a) when directed by the Project Officer pursuant to the above entitled "Technical Direction" and (b) whenever the contract requirements are changed by appropriate contract modification. The Contractor may submit recommended revisions to the Work Plan when the Contractor believes such revision is deemed desirable for optimum achievement of contract objectives. Every revision to the Work Plan must be approved by the Project Officer prior to implementation by the Contractor. An information copy of each revision shall be submitted to the Contracting Officer.

REPORTS OF WORK

MONTHLY TECHNICAL PROGRESS NARRATIVES

1. The Contractor shall submit a monthly technical progress narrative covering work accomplished during each calendar month of contract performance. Monthly Technical Progress Narratives shall be brief, factual, and informal and shall be prepared in accordance with the following format:

   a. A cover page containing:

      (1) Contract number and title
      (2) Type of report, sequence number of report (when applicable), and period of performance being reported
      (3) Contractor's name, address, and organizational segment generating the report
      (4) Author(s)
      (5) Date of Publication
      (6) "Prepared for the Environmental Protection Agency."

   b. Section I - An introduction covering the purpose and scope of the contract effort.

   c. Section II - A description of overall progress plus a separate description for each task or other logical segment of work on which effort was expended during the report period. Description shall include pertinent data and graphs in sufficient detail to explain any significant results achieved.

   d. Section III - A description of current problems that may impede performance along with proposed corrective action.

   e. Section IV - A description of work to be performed during the next reporting period.

   f. Section V - A statement of cost and man-hours expended during the preceding month; cumulative costs and man-hours expended to date and projected expenditures at contract completion.

2. When the date of the contract is prior to the middle of the calendar month, the initial monthly reports shall cover that partial month. When the date of the contract is on or after the middle of the calendar month, initial monthly reports shall cover that partial month and the subsequent full month. Thereafter, each monthly report shall cover one calendar month. Within ten (10) calendar days after the end of each reporting period, the Contractor shall distribute f.o.b. destination the specified number of copies of the Monthly Technical Progress Narrative to the addressees indicated in the report distribution portion of the contract.

REPORTS OF WORK

FINAL CONTRACT REPORT

1. The Contractor shall submit for review, a proposed final report to the Project Officer with a copy of the letter of transmittal to the Contracting Officer within fifteen (15) days following completion of the technical effort specified in the contract. The content of the proposed report must be of a quality suitable for publication and prepared in accordance with EPA Manual, "Scientific and Technical Publications," TN 3, dated May 14, 1974 (or the latest version) incorporated herein by reference. Approval or disapproval (in part or in total) of the final report will be accomplished by Project Officer within forty-five (45) days after receipt. Disapproved reports shall be resubmitted for review following correction of the cited deficiency unless otherwise directed by the Contracting Officer or Project Officer.

2. The proposed report shall document in detail all of the work performed under the contract including data, analyses, and interpretations, as well as, recommendations and conclusions based upon results obtained. The report shall include tables, graphs, diagrams, curves, sketches, photographs and drawings in sufficient detail to comprehensively explain the results achieved under the task. The report shall be complete in itself and contain no reference, directly or indirectly, to the periodical report(s).

3. After receipt of the Contractor's proposed final report, the Contracting Officer or the Project Officer may require the Contractor to present, at a site chosen by the requester, an informal briefing and review of all work performed under the contract.

4. Within thirty (30) calendar days after notification of approval of the Contractor's proposed final report, the Contractor shall distribute the number of copies as specified in the report distribution portion of this contract and a reproducible master copy of the approved final report.

5. All final reports must contain an EPA approved cover and an EPA report number (not the same as the contract number); disclaimer statement; and EPA Form 2220-1, Technical Report Data, as specified in the EPA Manual "Scientific and Technical Publications," TN 3.

The Contractor shall deliver F.O.B. destination all reports covered above in accordance with the following:

REPORT DISTRIBUTION

Nothing set forth herein regarding number of copies shall be construed as authority to disregard the provisions of the clause of this contract entitled "Printing."

Work Plan and Revisions

Addressee	No. of Copies
Contracting Officer	(1)
Project Officer	( )

Periodical Reports (Monthly)

Addressee	No. of Copies
Contracting Officer	(1)
Project Officer	( )

Final Report

Addressee	No. of Copies
Contracting Officer	(1)
Project Officer	( ) Including an error free master

Note: Additional addressees may be added to receive copies of the reports. The number of copies to be furnished the Project Officer will then be reduced accordingly. Changes, if any, to the distribution list will be furnished by the Contracting Officer at a later date.